

(No Model.)

W. A. MACK.
TENSION DEVICE FOR SEWING MACHINES.

No. 561,011.

Patented May 26, 1896.

Fig. 1.

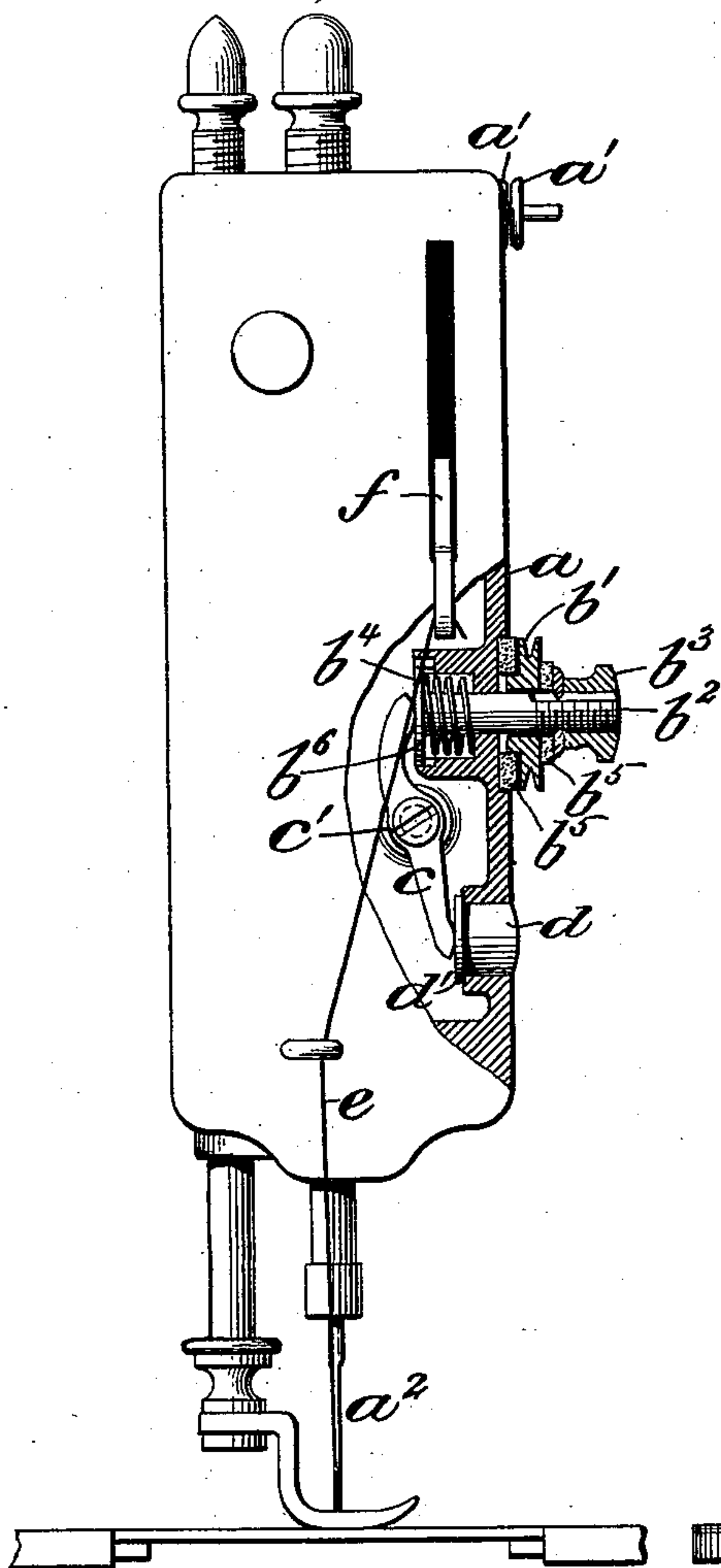
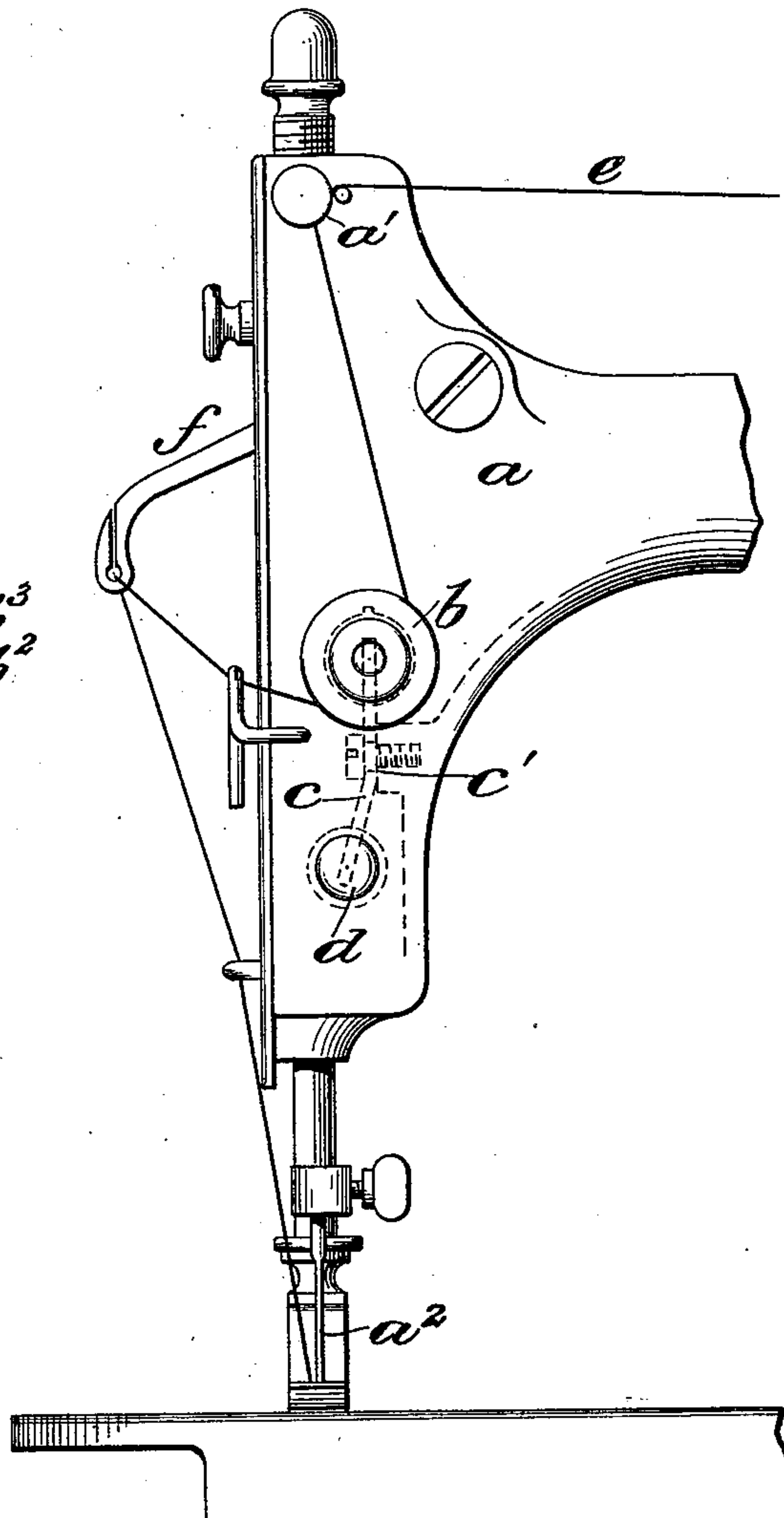


Fig. 2.



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UNITED STATES PATENT OFFICE.

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TENSION DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 561,011, dated May 26, 1896.

Application filed October 25, 1892. Serial No. 449,931. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. MACK, a citizen of the United States, and a resident of Norwalk, in the county of Huron and State of Ohio, have invented new and useful Improvements in Tension Devices for Sewing-Machines, of which the following description, taken in connection with the drawings herewith accompanying, is a specification.

My invention relates to that class of tension devices supported upon the arm or frame of the machine for producing the necessary tension upon the upper thread as it is passed from the spool to the needle; and it consists in the novel arrangement and combination of parts employed for operating such tension device to release the tension upon the thread, as will hereinafter be set forth in detail, and pointed out in the claims.

Referring to the drawings, Figure 1 represents an end view of the arm of a sewing-machine with the face-plate and arm partly broken away and in section, respectively, showing the construction and arrangement of the several parts forming the tension device. Fig. 2 represents a front view of the sewing-machine arm, showing the tension device in full and dotted lines and the thread in position.

To explain in detail, *a* represents a section of a sewing-machine arm for supporting the needle and presser-bars and other necessary parts, and *b* the tension device supported thereon. This device, in the present instance shown, consists of a disk having a groove *b'* in its periphery for the reception of the thread when connected therewith for the purposes of tension, as will be described, and the same is loosely mounted on a threaded spindle *b²*, supported in the arm *a* in a manner to turn or rotate thereon. The spindle *b²*, which is supported to freely slide in the arm or frame *a*, is provided with an adjusting-nut *b³* on its outer threaded end and with a coiled spring *b⁴* on its inner end, as clearly shown in Fig. 1. The spring *b⁴* has a stationary bearing at one end against the arm *a*, and at its opposite end acts against a flange or washer *b⁶*, located on the spindle *b²*, in order to exert an inward pressure on the latter, and I have located a washer *b⁵*, of felt or similar material, at each

side of the disk *b* to form a suitable frictional surface for contact therewith in order to produce a greater or less degree of friction thereon, according to the pressure exerted by the spring, to regulate its rotary movement as caused by the thread drawing against or around the same when drawn by the needle.

The degree of tension or pressure exerted by the spring *b⁴* is regulated by the adjusting-nut *b³*, by means of which the spindle *b²* may be adjusted longitudinally and the said spring be either compressed or loosened, as may be desired.

To release or remove the tension on the thread, I have provided a lever *c*, which is centrally pivoted on the arm *a*, as shown at *c'*, with one end in contact with the inner end of the spindle *b²* and its opposite end in contact with the inner end of a "push-button" *d*, which is located in the front wall of the arm *a*, as shown. The operator by pressing the button *d* inwardly will operate the lever *c* to move the spindle *b²*, with the nut *b³* thereon, outwardly, and thereby relieve the pressure on the tension-disk and allow it to rotate or turn freely and relieve all tension on the thread, as will be readily understood.

The push-button *d* is supported within a horizontally-arranged opening in the arm *a*, with its front face about flush with the surface of the latter, and is provided on its inner end with a flange *d'*, which is adapted to engage with the inner wall of the arm to prevent outward movement of the button. The latter is held in a normal operative position by the elastic pressure of the lever *c* thereon. This tension-releasing device might be employed in connection with other forms of tension device other than the disk *b*, as shown, without departing from the spirit of my invention. For instance, two disks might be employed, between which the thread would pass, and be operated to produce and relieve the tension on the thread by the same means as I employ in the present instance to operate or control the single disk *b*, as will be obvious.

The means for forming operative connection between the push-button and tension device might also be more or less modified and be within the scope of my invention, as it is obvious that the tension device and push-but-

ton may each be located at any desired and convenient position, isolated one from the other, upon the frame or arm of the machine, and the tension device be operated by said

5 push-button, the latter being located in a position convenient to the operator and at a point distant from the tension device through the medium of a suitable intermediate connection.

10 In operation the thread *e* passes from the spool located on the arm of the machine forward and between two disks *a'* *a'*, and from thence down around the tension device *b*, up through the take-up arm *f*, and then through

15 the needle *a*². The tension on the thread is regulated by the freedom with which the disk *b* revolves, and this is regulated by the adjusting-nut *b*³, as set forth. When the operator wishes to release all tension on the thread

20 for the purpose of withdrawing the goods being operated upon from beneath the presser-foot or otherwise, the button *d* is pressed inwardly and all pressure or friction is removed from the disk *b* to allow it to rotate freely and

25 thereby release the tension on the thread, as will be readily understood.

Having thus set forth my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

30 1. In a sewing-machine, the combination with the frame thereof, of a spindle, carrying a tension device, freely sliding in said frame, a push-button freely sliding in said frame and isolated from said tension device, means form-

ing a positively-operating connection between 35 said spindle and button, and means for normally exerting pressure upon the tension device and for holding the push-button in operative position, substantially as described and for the purpose set forth. 40

2. In a sewing-machine, the combination with the frame thereof, of a spindle, carrying a tension device, freely sliding in said frame, a push-button freely sliding in said frame, a single pivoted lever forming an operative con- 45 nection between said spindle and button, and means for normally exerting pressure upon the tension device, and for holding the button in operative position, substantially as described and for the purpose set forth. 50

3. In a sewing-machine, the combination with the frame thereof, a spindle, carrying a tension device, freely sliding in said frame, and a spring located and acting upon said spindle to normally hold the tension device 55 thereon in operative position, of a push-button freely sliding in said frame, and a single pivoted lever supported with its opposite ends in engagement with said spindle and button, respectively, and caused by the spring to nor- 60 mally hold the button in operative position substantially as described and for the purpose set forth.

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Witnesses:

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